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ASSOCIATES.  
INC.

Environmental and Geotechnical Services

COLSF 84 VI

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July 7, 1994

JUL 11 1994

Mr. Mike Kuntz and Mr. Ali Raad  
Washington State Department of Ecology  
P.O. Box 47600  
Olympia, WA 98504-7600

SUPERFUND BRANCH

**RE: COLBERT LANDFILL REMEDIAL ACTION  
PRELIMINARY OPERATIONAL PROGRESS REPORT  
REPORTING PERIOD MAY 5, 1994 THROUGH JUNE 29**

Dear Messrs. Kuntz and Raad:

This letter supplements the monitoring and analytical data for the Colbert Landfill Remedial Action project that was transmitted to you under separate cover on July 7, 1994 pursuant to the Consent Decree and the NPDES Interim Discharge Requirements stated in the letter from the Department of Ecology to the Spokane County Utilities Department dated April 6, 1994. The Remedial Action facilities were placed into operation on May 5, 1994 and resulted in the discharge of treated water to the Little Spokane River. Operation of the groundwater extraction system was intermittent for approximately the first month. At no time did non-operation of the Remedial Action facilities result in any discharge of untreated water to the Little Spokane River. Periods of non-operation of the facility were necessary to accomplish start-up, operational testing and systems validation testing of the automated instrumentation, controls, monitoring, and reporting systems incorporated into the Remedial Action facilities.

The Interim Discharge Requirements established requirements for discharge of treated groundwater to the Little Spokane River for the first 90 days of full-scale operation beginning on April 11, 1994. Recognizing that the intent of the permit was to allow 90 days of full-scale operation as stated in Paragraph S7 Interim Substantive Requirements, it is our understanding that the interim discharge requirements will not expire on July 11, 1994, but will actually lapse on August 5, 1994, due to unavoidable delay to May 5, 1994 in start-up of the Remedial Action facilities. The analytical data and associated summary tables transmitted under this letter are for the period from May 5, 1994 through June 8, 1994. This represents all the analytical results we have received to date from the independent state certified analytical laboratory. Additional samples have been collected since June 8 and submitted for analysis in conformance with the sampling schedule and analytical protocols defined by the substantive NPDES requirements.

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Spokane County requested normal laboratory turn-around for the analytical data, consequently there is approximately a three-week lag between the time samples are collected and the time that the results are received. Spokane County intends to continue collection of samples up to August 5, 1994. Field data provided in the summary tables (i.e. Table 1 and 2 respectively), for parameters such as pH, conductivity, turbidity, and pumping rates, are provided for the time period through June 29, 1994. Additional laboratory analytical results will be transmitted as they become available.

Approximately 50 million gallons of contaminated water was extracted from the aquifers, treated and then discharged to the Little Spokane River between May 5 and June 29, 1994. During the period May 5 through June 8, 1994, approximately 28 million gallons of contaminated groundwater water was extracted from the aquifers, treated and then discharged to the Little Spokane River. Analytical test results (summarized in the attached tables), indicate that all VOC constituents of concern identified in the Consent Decree have been consistently removed from the groundwater by the Remedial Action treatment facilities to below the practical quantification limits (PQLs) for all constituents detected by EPA Method 8010; the Remedial Action treatment facilities have consistently achieved the performance standards and evaluation criteria specified by the Consent Decree. Moreover, no PCB's, Pesticides, Metals, or Semi-VOAs have been detected in the influent groundwater conveyed to the Remedial Action treatment facility or in the treated groundwater (i.e. effluent) discharged to the Little Spokane River.

Chronic toxicity bioassays indicate no adverse effect of the treated water on fish or algae. Algal growth studies show no algal growth stimulation caused by water discharged from the facility to the Little Spokane River.

Phosphorous concentrations in the water discharged to the Little Spokane River are low and are consistent with background concentrations in the aquifer as established from samples collected from monitoring wells in 1993.

Turbidity measurements taken at the facility effluent indicate that the turbidity of the water being discharged to the Little Spokane River is significantly lower than the river water both upstream and downstream of the outfall. Turbidity measurements performed on water samples collected upstream, downstream, and at the outfall are presented in Table 3. Based on the data collected we conclude that the turbidity of the river is not adversely affected by the discharge or outfall construction. Moreover the data appear to indicate that there is a

measurable improvement or beneficial effect of the treated groundwater discharge on the river water clarity.

Based on the data obtained to date, the Remedial Action treatment facility is performing better than required and exceeding our expectations. We appreciate that the intent of the interim testing requirements is to eliminate any tests that can be proven to be unnecessary. We are confident that a sampling and monitoring plan can now be tailored to address the volatile constituents of concern, while eliminating or reducing the sampling frequency for the other constituents, such as semi-VOAs, pesticides, metals, bioassays, algal growth potential, nitrogen species and phosphorous. We look forward to working with you towards this goal, and welcome the opportunity to discuss this data with you.

This report describes progress on only the primary project remedial action activities. There are peripheral activities associated with the primary activities which are not described herein. If clarification is required for any of the activities presented in this progress report, or if additional information is desired for peripheral activities, please contact Landau Associates or Dean Fowler (Spokane County).

LANDAU ASSOCIATES, INC.

By:

*John A. Markus/DU*

John A. Markus, P.E.  
Project Manager

JAM/jam  
No. 124002.120

cc: Neil Thompson, U.S. Environmental Protection Agency  
Dean Fowler, Spokane County

Attachments:

Table 1 COLBERT LANDFILL RA - TREATMENT FACILITY INFLUENT  
WATER QUALITY DATA

Table 2 COLBERT LANDFILL RA - TREATMENT FACILITY EFFLUENT  
WATER QUALITY DATA

Table 3 COLBERT LANDFILL RA - FIELD TURBIDITY MEASUREMENTS IN THE LITTLE  
SPOKANE RIVER



TABLE 1  
TREATMENT FACILITY INFLUENT WATER QUALITY DATA

PARAMETER (UNITS)	MRL	SAMPLE DATE SAMPLE NO.	MAY 18 203*,205(G)	MAY 21 208*	MAY 22 210*	MAY 23 212	MAY 24 215,216(G)	MAY 25 219,220(G)	MAY 26 225,226(G)	MAY 27 229,230(G)	MAY 28 232	MAY 29 234	MAY 30 237,238(G)	MAY 31 241,242(G)	JUN 01 245,246(G)	JUN 02 249,250(G)	PERFORMANCE CRITERIA (ug/L)
pH																	NA
CONDUCTIVITY (umho/cm)			797,584(G)	803	808	804	833(G)	862	625		500	510	512	506	504		NA
TEMPERATURE (deg F)																	NA
TURBIDITY (NTU)				0.32	0.43						0.48	0.44	0.26				NA
VOC (ug/L)																	
Freon 12	1		ND	ND	ND	ND	ND	16	13	9.4	ND	ND	ND	ND	ND	ND	NA
Chloromethane	1		ND	ND	ND	ND	ND	2.5	1.9	ND	ND	ND	ND	ND	ND	ND	NA
Chloroethane	0.5		ND	ND	ND	ND	<2	7.9	5.8	2.9	ND	ND	ND	ND	ND	ND	NA
Freon 11	0.5		ND	ND	ND	ND	ND	10	8	3.8	2.1	1	0.5	ND	ND	ND	NA
1,1 Dichloroethene	0.5		96	25	30	80	87	98	73	36	29	16	8	5.5	4.5	12	7
Methylene Chloride	5		280	160	201	260	260	350	300	160	55	14	3	2	ND	9.2	2.5
cis-1,2-Dichloroethene	0.5		3.5	ND	ND	ND	2.6	3.2	2.5	1.6	1.2	0.7	ND	ND	ND	ND	NA
1,1 Dichloroethane	0.5		23	13	14	22	21	27	22	15	12	8.4	7.2	7.1	7.5	5.7	4050
Chloroform	0.5		3.4	ND	ND	3	3	3.7	2.2	1.5	1	0.5	ND	ND	ND	ND	NA
1,1,1-Trichloroethane(TCA)	0.5		440	160	180	360	340	490	450	220	230	150	84	67	62	97	200
Trichloroethene (TCE)	0.5		13	ND	ND	6.4	7	12	8.4	6.6	4.6	3.2	2	1.5	1.2	0.9	5
Tetrachloroethene (PCE)	0.5		ND	ND	ND	ND	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	0.7
INORGANIC (mg/L)																	
Alkalinity	20		282(G)	386	404	410	416(G)	437(G)	323(G)	288(G)	232	235	230(G)	244(G)	235(G)	290(G)	NA
Hardness	0.2		306(G)	431	430	431	462(G)	480(G)	359(G)	298(G)	261	263	255(G)	270(G)	266(G)	315(G)	NA
TOTAL METALS (All Analytes)	*							ND									NA
PESTICIDES/PCB'S	*							ND									NA
SEMI-VOLATILES	*							ND									NA

Note: All Samples are composite samples unless specified otherwise  
 \* See Lab Report for Method Reporting Limit (MRL)  
 ND = NON DETECT, NA = NOT APPLICABLE, (G) = GRAB  
 P = ANALYTICAL DATA PENDING



TABLE 1  
TREATMENT FACILITY INFLUENT WATER QUALITY DATA

PARAMETER (UNITS)	MRL	SAMPLE DATE SAMPLE NO.	JUN 08 252,253(G)	JUN 15 258,259(G)	JUN 24 276,277(G)	JUN 29 280,281(G)	PERFORMANCE CRITERIA (ug/L)
pH							NA
CONDUCTIVITY (umho/cm)			616(G)		816	759	NA
TEMPERATURE (deg F)							NA
TURBIDITY (NTU)							NA
VOC (ug/L)							
Freon 12	1		15	P	P	P	NA
Chloromethane	1		ND	P	P	P	NA
Chloroethane	0.5		4.1	P	P	P	NA
Freon 11	0.5		5.5	P	P	P	NA
1,1 Dichloroethene	0.5		56	P	P	P	7
Methylene Chloride	5		130	P	P	P	2.5
cis-1,2-Dichloroethene	0.5		1.6	P	P	P	NA
1,1 Dichloroethane	0.5		15	P	P	P	4050
Chloroform	0.5		1.9	P	P	P	NA
1,1,1-Trichloroethane(TCA)	0.5		310	P	P	P	200
Trichloroethene (TCE)	0.5		6.4	P	P	P	5
Tetrachloroethene (PCE)	0.5		ND	P	P	P	0.7
INORGANIC (mg/L)							
Alkalinity	20		427(G)				NA
Hardness	0.2						NA
TOTAL METALS (All Analytes)	*			P			NA
PESTICIDES/PCB'S	*			P			NA
SEMI-VOLATILES	*			P			NA

Note: All Samples are composite samples unless specified otherwise

\* See Lab Report for Method Reporting Limit (MRL)

ND = NON DETECT, NA = NOT APPLICABLE, (G) = GRAB

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TABLE 2  
TREATMENT FACILITY EFFLUENT WATER QUALITY DATA

PARAMETER (UNITS)	MRL	SAMPLE DATE SAMPLE NO.	MAY 6 200**	MAY 12 201**	MAY 17 204	MAY 18 202,206(G)	MAY 21 207	MAY 22 209	MAY 23 211	MAY 24 213,214(G)	MAY 25 217,218(G)	MAY 26 223,224(G)	MAY 27 227,228(G)	MAY 28 231	MAY 29 233	MAY 30 235, 236(G)	PERFORMANCE CRITERIA (ug/L)
pH			7.95	8.55		7.80,7.90(G)	7.80	7.80	7.80		7.78(G)	7.81	8.10(G)	7.80	7.80	7.70	
CONDUCTIVITY (umho/cm)			861	807		770,592(G)	761	766	768	795(G)	816	660	619	497	505	504	
TEMPERATURE (deg F)						58(G)	58	59	60	59(G)	59	60	59(G)	57	58	58	
TURBIDITY (NTU)							0.78	0.39	0.18	0.16(G)	0.38, 0.23(G)	0.17	0.14(G)	1.35	0.50	0.31	
VOC (ug/L)																	
Freon 12	1				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Chloromethane	1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Chloroethane	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Freon 11	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
1,1 Dichloroethene	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7
Methylene Chloride	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.5
cis-1,2-Dichloroethene	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
1,1 Dichloroethane	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4050
Chloroform	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
1,1,1-Trichloroethane(TCA)	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Trichloroethene (TCE)	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Tetrachloroethene (PCE)	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.7
INORGANICS (mg/L)																	
Alkalinity	20					282,398(G)	396	414	402	419(G)	438(G)	313	270(G)	236	234	236	NA
Hardness	0.2					306,417(G)	424	430	428	470(G)	450(G)	359	304(G)	263	263	258	NA
Ammonia as Nitrogen	0.05										ND						NA
BOD	4					ND	ND	ND	ND	ND	ND	ND	ND			ND	NA
COD	5					ND	ND	ND	ND	6	ND	ND	6	ND	ND	ND	NA
Nitrate + Nitrite as Nitrogen	0.2										3.9						
Nitrogen, Total Kjeldahl (TKN)	0.1										0.8						
Phosphorus, Total	0.01					0.03	0.02	0.03	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.03	NA
TDS	5					478	472	475	479	475	518	462	409	311	309	310	NA
TSS	5					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
TOC	0.5					1.2	1.3	1.2	1.8	1.3	0.7	0.8	0.9	0.5	0.6	0.7	NA
TOTAL METALS (All Analytes)	*										ND						NA
PESTICIDES/PCB'S	*										ND						NA
SEMI-VOLATILES	*										ND						NA

Note: All Samples are composite samples unless noted otherwise

\* See individual Lab Reports for Method Reporting Limit (MRL)

\*\* VOC Analysis for this sample was by EPA Method 8240

ND = NON DETECT, NA = NOT APPLICABLE, (G) = GRAB

P = ANALYTICAL DATA PENDING



TABLE 2  
TREATMENT FACILITY EFFLUENT WATER QUALITY DATA

PARAMETER (UNITS)	MRL	SAMPLE DATE SAMPLE NO.	MAY 31 239,240(G)	JUN 01 243,244(G)	JUN 02 247,248(G)	JUN 08 250(E),251(G)	JUN 10 254	JUN 13 255	JUN 15 256, 257(G)	JUN 24 274,275(G)	JUN 29 278, 279(G)	PERFORMANCE CRITERIA (ug/L)
pH			7.79	7.78	8.10	7.61(G)		7.55		8.00	7.90	
CONDUCTIVITY (umho/cm)			502	493	572	593	637	716		785	747	
TEMPERATURE (deg F)			60	59	62	58(G)	59	59		51.8	52	
TURBIDITY (NTU)			0.12	0.08	0.31	0.10(G)	0.45	0.40		0.05		
VOC (ug/L)												
Freon 12	1		ND	ND	ND	ND			P	P	P	NA
Chloromethane	1		ND	ND	ND	ND			P	P	P	NA
Chloroethane	0.5		ND	ND	ND	ND			P	P	P	NA
Freon 11	0.5		ND	ND	ND	ND			P	P	P	NA
1,1 Dichloroethene	0.5		ND	ND	ND	ND			P	P	P	7
Methylene Chloride	5		ND	ND	ND	ND			P	P	P	2.5
cis-1,2-Dichloroethene	0.5		ND	ND	ND	ND			P	P	P	NA
1,1 Dichloroethane	0.5		ND	ND	ND	ND			P	P	P	4050
Chloroform	0.5		ND	ND	ND	ND			P	P	P	NA
1,1,1-Trichloroethane(TCA)	0.5		ND	ND	ND	ND			P	P	P	200
Trichloroethene (TCE)	0.5		ND	ND	ND	ND			P	P	P	5
Tetrachloroethene (PCE)	0.5		ND	ND	ND	ND			P	P	P	0.7
INORGANICS (mg/L)												
Alkalinity	20		248(G)	246	295	405(G)			P			NA
Hardness	0.2		275(G)	268	320				P			NA
Ammonia as Nitrogen	0.05											NA
BOD	4		ND	ND	ND	ND			P			NA
COD	5		ND	ND	ND	ND			P			NA
Nitrate + Nitrite as Nitrogen	0.2											
Nitrogen, Total Kjeldahl (TKN)	0.1											
Phosphorus, Total	0.01		0.03	0.03	0.03	0.02			P			NA
TDS	5		300	324	371	442			P			NA
TSS	5		ND	ND	ND	ND			P			NA
TOC	0.5		0.7	0.7	0.7	1.1			P			NA
TOTAL METALS (All Analytes)	*								P			NA
PESTICIDES/PCB'S	*								P			NA
SEMI-VOLATILES	*								P			NA

Note: All Samples are composite samples unless noted otherwise  
 \* See individual Lab Reports for Method Reporting Limit (MRL)  
 \*\* VOC Analysis for this sample was by EPA Method 8240  
 ND = NON DETECT, NA = NOT APPLICABLE, (G) = GRAB  
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Table 3

**COLBERT LANDFILL RA  
FIELD TURBIDITY MEASUREMENTS  
IN THE LITTLE SPOKANE RIVER**

DATE	OUTFALL Location :Turbidity	UPSTREAM Location: Turbidity	DOWNSTREAM Location: Turbidity
5/26/94	O1: 0.08 NTU	U1: 1.10 NTU	D1: 0.91 NTU
7/7/94	O1: 0.12 NTU O2: 0.03 NTU O3: 0.10 NTU O1d1: 0.07 NTU O1d2: 0.10 NTU	U1: 1.04 NTU U2: 1.18 NTU U2d1: 1.16 NTU U3: 1.03 NTU U4: 1.18 NTU	D1: 1.04 NTU D2: 1.04 NTU D3: 1.04 NTU D3d1: 1.04 NTU D4: 1.04 NTU
7/7/94	Composite: 0.07 NTU	Composite: 1.07 NTU	Composite: 0.78 NTU

NOTES: U1 represents a water sample taken from the upstream sampling location approximately 1/4 of the distance across the river; similarly U2 would represent 1/2 or the center of the river. U2d1 represents a duplicate of U2. Refer to diagrammatic illustration below for further clarification of sample locations. Relative locations for upstream and downstream sampling locations are the same as those occupied for algal growth potential studies.

